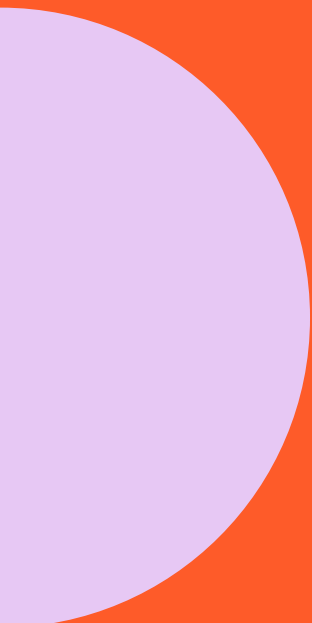


CO-CREATION AND OPEN SCIENCE



Perspectives on
Participatory Methods
and Transparency

Introduction

This document offers an exploration of how co-creation and participatory methods shape Open Science, particularly in the context of the IANUS project. Aimed at both researchers and general audiences interested in science's role within society, it brings together multiple perspectives on Open Science's potential to make research more inclusive, transparent, and responsive to public needs. Readers will gain insights into how Open Science principles are implemented, the value of co-creation, and how these practices address societal expectations of accountability and transparency.

Using the 'window' metaphor, we illustrate Open Science as a two-way process, where the public can gain insight into research practices, and researchers can see and respond to societal needs. This document frames Open Science not as a toolbox, but as a conceptual contribution that integrates different participatory approaches and emphasises transparency, accountability and collaboration. Each concept is elaborated on in short texts. For readers interested in a deeper context, a more extensive version can be found [here](#), and further reading is recommended at the end of this document for those seeking additional resources.



Openness in Research

Evaluation

Conflicts
of
Interest



Societal
needs

Research
methods

Openness as Participation

Open Science prioritises public participation, engaging societal stakeholders as either contributors or collaborators throughout the research process. This participatory openness ensures that scientific inquiry is not isolated but enriched by diverse perspectives, aligning research objectives with societal needs. **Citizen science**, a prominent example, embodies this engagement: citizens might contribute by gathering data, helping analyse findings, or even taking part in the decision-making process. These roles not only democratise science but also increase its relevance and impact.

Three primary motivations support the participatory turn in Open Science:

Substantive - Enhancing research outcomes by integrating varied perspectives.

Normative - Upholding democratic principles in research that affects public life.

Instrumental - Fostering public acceptance and support for scientific endeavours.

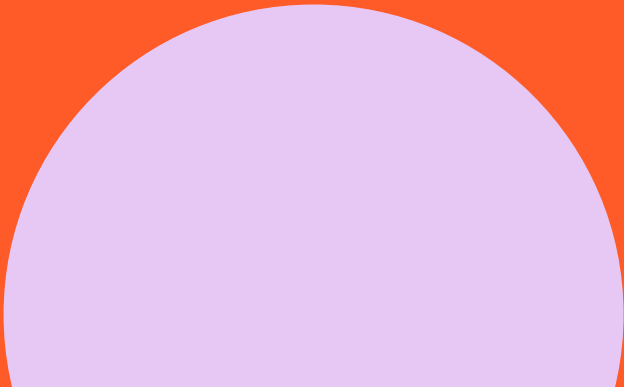
Despite the advantages, public participation in science involves challenges, such as timing, representation, and the depth of stakeholder involvement. Effective participation requires strategies tailored to specific contexts, ensuring inclusivity and balancing differing interests. Open Science frameworks, promoted by the EU and UNESCO, highlight the role of public engagement in bridging science and society, helping to steer research toward socially desirable outcomes.

Openness as Transparency

Transparency is a cornerstone of Open Science, facilitating public trust and enabling scrutiny of the research process. Through open data, preregistration, and open access publishing, scientists make their methods and results accessible, allowing the public to evaluate research independently.

This transparency ensures accountability and supports responsible research conduct, aligning with the [European Code of Conduct for Research Integrity](#) and guidelines from the National Academies of Sciences.

While transparency provides critical checks and balances, it requires a thoughtful balance with confidentiality, particularly when managing sensitive data. Over-sharing can lead to confusion or public distrust if information is overly technical or challenging to interpret. Therefore, transparency should be part of a broader strategy of effective communication that makes science comprehensible and actionable for all stakeholders.



Participatory Research Methods

Participatory methods in research bring together various stakeholders, blending established scientific techniques with innovative approaches to meet unique contextual challenges. Rather than introducing entirely new methods, participatory research often relies on **tinkering**—adjusting existing methods to enhance inclusivity and responsiveness.

This adaptable approach addresses challenges such as reaching diverse audiences, managing digital engagement, and fostering respectful discourse on contentious issues.

Meta-analysis of participatory projects reveals that sustainable impact stems from continuous engagement and adaptability. Projects that prioritise reflexivity, where researchers routinely reassess their methods to align with stakeholder feedback and evolving contexts, often achieve more lasting societal benefits. Sustainability is further strengthened when participatory projects cultivate communities of practice that endure beyond the project's lifespan, fostering ongoing knowledge exchange and public engagement.

Conflicts of Interest and Risks in Open Science

Conflicts of Interest (COIs) are a critical consideration in Open Science, arising when external pressures compromise scientific integrity and accountability. Funding dependencies, publishing pressures, and institutional biases can create COIs that undermine transparency. By involving public stakeholders at multiple research stages, Open Science and participatory methods provide a framework to identify and mitigate these risks, enhancing ethical oversight and ensuring that research remains aligned with societal values.

COIs often manifest as issues such as selective reporting, publication bias, or skewed peer review processes. Open peer review, financial disclosure, and expanded roles for ethics committees are strategies that Open Science adopts to counter these risks. Open peer review, for example, increases accountability, reduces biases in evaluations, and aligns with Open Science's core principles of transparency and inclusivity.

COIs also highlight the importance of **clear ethical guidelines** for research with dual-use potential—where findings could have both beneficial and harmful applications. Through stakeholder involvement, participatory research can preemptively address ethical considerations, ensuring that the research aligns with public interests and minimises potential misuse.

Open Science, Societal Needs, and Potential Risks

While transparency promotes trust, Open Science also introduces unique challenges when navigating between openness and the protection of public interests. For instance, sharing information prematurely or without sufficient context can result in misunderstandings or even warranted distrust. **Open washing**—presenting superficial transparency without genuine substance—risks public trust by masking untrustworthy practices under the guise of openness.

Open Science aspires to societal benefits, achieved directly through data sharing and indirectly by cultivating an informed, engaged public. Yet, these benefits are only realised when transparency practices are reflective, adaptable, and aligned with ethical considerations.

Reflexivity—actively assessing the appropriateness and impact of transparency—ensures that Open Science practices remain responsive to changing societal needs. This flexibility, inclusivity, and ethical consideration allow Open Science to address complex societal challenges while fostering long-lasting community engagement.



Evaluating Participatory Methods

Evaluating participatory research methods is essential for understanding their impact on both science and society. Effective evaluation requires frameworks that assess not just outcomes but also the interactions between stakeholders, supporting an iterative process of reflection and refinement. Several established frameworks guide these assessments:

1. **Participatory Impact Pathways Analysis (PIPA)** - Maps research activities to societal impacts, helping stakeholders understand the pathways through which their participation leads to change.
2. **Social Impact Assessment through Productive Interactions (SIAMPI)** - Prioritises the quality of relationships and interactions among stakeholders, recognizing these as key drivers of impact.
3. **Contribution Mapping** - Clearly identifies a project's unique contributions to broader social objectives, clarifying its societal role.
4. **Payback Framework** - Assesses the societal and financial returns of research, particularly relevant in health and social science fields.

These frameworks provide tools for measuring the varied impacts of participatory methods, offering a comprehensive view of how Open Science and co-creation approaches enhance societal relevance and inclusivity.

Further Reading

For readers interested in exploring these concepts further, a list of resources is provided at the end of this document. This additional reading expands on the theoretical and practical applications of co-creation, participatory methods, and Open Science, offering case studies and advanced analyses that deepen understanding. Acknowledgments are also given to the team members who contributed to the development of this document, celebrating the collaborative effort behind this exploration of Open Science.

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